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ORIGINAL ARTICLES.

HYSTERICAL DISORDERS OF THE EYE.*

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IT is not strange, the functions being—as they are in hysteria—dominated and modified by ideas, that the eye should share in the disturbances produced. Writers on the subject of hysteria are, at the present time, quite universally agreed that the disturbances are psychic in character, beginning in the higher cortical centers, the function of the lower centers of the brain, spinal cord, and of the sympathetic nervous system becoming secondarily involved.

The age, according to Gowers, at which hysteria manifests itself is, in fifty per cent. of the cases, between the years of ten and twenty. It is not strange therefore that its affection of the special sense, sight, is of such frequent occurrence in early life; and this is further accounted for by the fact that when sight is disturbed it is frequently one of the early manfestations of the hysterical affection.

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Among the disturbances noted are those of (*a*) sight, (*b*) sensation, (*c*) motion, (*d*) secretion, and (*e*) peculiar associated sensations (*audition colorée*).

(*a*) Concerning sight disturbance we observe that *amaurosis* rarely attains to total blindness, it being usually unilateral and accompanied by amblyopia, more or less marked in degree, of the fellow eye. This is explained by the theory of its being a "crossed amblyopia," the affection involving the center of vision, higher than that for the half field vision, in which the entire field of the eye opposite the hemisphere is fully represented and that of the same side partially. This center is located in the lower and posterior part of the parietal lobe, the supra-marginal and angular convolutions. Of it Ferrier says: "Unilateral destruction of the cortex of the angular gyrus (in the monkey) causes temporary abolition or impairment of sight in the opposite eye, not of hemiopic character." Starr cites the fact of many lesions of the angular gyrus, not involving vision; thirteen such cases recorded by Ferrier and twenty-two by Exner. The few cases observed do not as yet clear up the question completely.

If we may assume a primary inhibition of the activity of the higher centers in the angular gyrus, the "crossed amblyopia" thus produced explains the affection of vision most frequently observed in hysteria and leaves a derangement of the pupillary reflex, etc., to a secondary inhibition of other centers.

Priestly Smith maintains that the condition is due to retinal involvement, but fails to account satisfactorily for the frequent retention of the pupillary reflex.

Max Knies advances the thought that a compression of the optic nerve is brought about by a vaso-motor relaxation in the vascular supply of the tissues at the optic foramen, thus more or less impairing its conductivity.

Gowers acknowledges that there may be pathological susceptibilities common in hysteria to both the center and the retina, but believes the theory of cortical inhibition best explains the phenomena. He calls attention to the obscurity produced by referring the changes to the vaso-motor system, as this explains the condition only by making it dependent upon derangement of the sympathetic system.

Amblyopia is frequently bilateral, often affecting one eye to a more marked degree than its fellow. The visual field is concentrically contracted, the color fields, beside the contraction, often showing transposition or even a total color-blindness.

"Transfert," the transferring of the affection from one side to the other by suggestion, using therefor a magnet or any object supposed to possess intrinsic power, may be demonstrated. The examination at short intervals shows marked changes in visual acuity and the fields of vision. Even a few minutes may be sufficient time to demonstrate either marked contraction or expansion of the field. The suggestion that a plane glass will greatly improve vision is often acted upon immediately. Paræsthesiæ usually confined to one side, and that of the more affected eye, are frequently demonstrable.

When, as frequently occurs, a suspicion of simulation is aroused by the patient's response in answer to confusion tests, these other symptoms of hysteria are of importance from a diagnostic standpoint. In traumatic hysteria, where a legal controversy for damages frequently exists, the difficulty is enhanced, but it is often present when absolutely no cause for simulation can be found. Max Knies calls attention to the value of "other undoubted hysterical symptoms" in such cases.

Prince cites a case of apparent simulation where a case of monocular amblyopia, relieved by resuming binocular vision, incapacitated an applicant for a position requiring normal vision. In summing up his paper he speaks of the "startling results" obtained by confusion tests for simulation, and says "conclusions drawn from such tests are liable to lead to grave error."

Asthenopia (Kopiopia hysterica, Förster) ist hat type of case characterized by extreme tiring of the eyes with exaggeration of painful symptoms. Muscular, refractive, and all discoverable peripheral irritations being sought out and relieved, still these patients frequently continue to find cause for complaint in such symptoms as radiating eye pain or headache with an exhaustion of the retina, evidenced by blurring vision, following slight use of the eye. Central vision is likely to be found normal, but the concentric contraction of the visual field

and color defects are generally present. After using the eyes vision will be found lowered.

Monocular diplopia is unsatisfactorily explained by irregular ciliary contraction. I have carefully examined two cases under the influence of a mydriatic (atropia) and been unable to detect any physical cause to account for the phenomenon; the retinoscope showed no peculiarity in the shadow whatever, and yet its image appeared double in the eye under examination and the correcting lens did not relieve the duplication. I confess an inability to account for the condition except to refer it to an anomalous translation of the stimulus in the disordered higher centers.

Hemianopsia purely functional in character is of rare occurrence. Hallucinations, astigmatism and scotomata are reported.

These disorders of sight are of sudden inception, last indefinite periods, and generally disappear entirely, often suddenly. The fundus shows no change from the normal. The functional loss may become permanent, but in what way the change in structure is brought about is unknown. A question as to the accuracy of the diagnosis naturally arises in such a case, but typically functional cases have been known to be followed by a permanent loss. (Gowers).

(*b*) Disorders of sensation include paræsthesia of all degrees. Anæsthesia or hyperæsthesia of the cornea, conjunctiva, and integument of the lids and temple may be present singly or in a group. The anæsthetic cornea, when irritated, may cause reflex injection of the anterior ciliary and conjunctival vessels and increased secretion of the tears; it is not involved in neuro-paralytic keratitis.

In hyperæsthesia the vision may be increased, but photophobia may be present and vision reduced. Hyperæsthesia of the ciliary body, *i. e.*, "ciliary pains without findings," has already been mentioned under the heading asthenopia.

(*c*) Disorders of motion include both paralysis and spasm. Of paralysis of the *extrinsic* muscles mentioned in literature, I find only abducens paralysis and ptosis. Möbius is quoted as denying hysterical paralysis of eye muscles, and saying that all such cases are traumatic. Others advance the thought that a spasm of the opposing muscle more likely produces the

condition, *i. e.*, apparent abducens paresis, by a spasm of the internal rectus. Spasmodic conditions more frequently prevail. Hysterical blephorospasm is most often bilateral. It appears suddenly and is as suddenly relieved, the attack lasting from hours to even months; pressure points often exist, *i. e.*, points usually in the territory supplied by the trigeminus, upon which pressure at once relieves the blephorospasm. When the lids are simply held quietly closed the resemblance to ptosis is marked, but is diagnosed by the presence of resistance to effort at lifting the lid, the lowering of the eyebrow and the vertical furrows produced by the orbicularis contraction.

Both paresis and paralysis affect the *intrinsic* muscles. Charcot describes a "contracture" of the ciliary muscle in which the remote and near point become fixed at a certain distance from the eyes. This is distinguished from paresis by the absence of any range of accommodation, as will be found in the latter.

The dilator and sphincter iridis are affected, as evidenced by the pupil and its reactions. I have seen in a highly emotional female a marked mydriasis in one eye only in conjunction with a typical functional aphonia. After the latter was relieved the mydriasis recurred at intervals with no subjective disturbance observable. No medicinal or auto-toxic explanation was possible.

(*d*) Of the disorders of secretion epiphora without a cause is of comparatively common occurrence. Chromhidrosis of the lids is quite as rare.

(*e*) Of perversion of associated sensations, both *audition colorée* and "sounding vision" have been observed. As in affections of sight, these varied disturbances are usually found in connection with other hysterical symptoms, but may be the only symptoms present. Their diagnosis from beginning organic disease is not always easy or possible at first examination, but their anomalous course and distribution usually furnish unmistakable signs of their functional character. The prognosis is dependent upon the patient's age, antecedents, physical condition, the degree of hysteria manifested and its duration, and the presence of discoverable peripheral irritation.

A rational treatment takes into consideration all these facts; from the standpoint of the ophthalmologist, treatment must, in a certain degree, be governed by the eye findings, but in no case of a child affected with hysteria should he consider his duty done until he has advised with the parents and the family physician concerning the condition and its management. It is the early treatment or management of these little patients that means much as to whether they are to become self-reliant, useful individuals or unhappy neurotics. Their trouble should not be minimized by classing it as imaginary; yet, on the other hand, the error must not be made of making them a cause for sympathy and commiseration.

I believe that as a rule hysteria as a word in diagnosis should not be used in speaking of such cases to either the patients themselves or the parents; it carries with it to the lay mind a suggestion of "much ado about nothing," of a simulation and deceitfulness. An explanation of the condition as "neurasthenic" or "reflex" is much better received.

In the treatment of hysterical amblyopia in children, hypnotism has been tried and recommended. I have not tried it. It is my rule to inspire them with a "good faith and *strong* imagination."

Suggestive therapeutics has been and will probably remain one of the great powers for good in these cases. An authoritative, positive opinion of good to surely follow a line of treatment means much to these patients. And the more the suggestion can be conveyed in the rules regulating their habits of work, study, and play, the better. Placebos, such as plane spectacles, should be avoided if possible. A placebo remedy may be necessary. It has been my experience to find in all cases of ocular hysteria a refractive error warranting correction. This should be corrected. A muscular defect, proven to be not functional, should be remedied if of sufficient degree by an appropiate operation. Faradism is, of course, to be tried in persistent affections, and is often very beneficial.

Case I.—Amblyopia left, recurring in right eye two weeks later, with central scotoma for red and green, concentrically contracted fields and confusion in naming red and green.

A. B., age 19. A well-developed, healthy looking girl, of quiet appearance but nervous manner of speech. Novem-

ber 19, 1900, complains that about two weeks ago she observed the vision of the left eye to have almost disappeared during the night; since then has been having headache and eye-strain. O.D.V. $^{6}/_{6}$. O.S.V. $^{6}/_{9}$. Pupillary reflexes respond promptly; fundi normal in appearance.

November 22, 1900, having used atropia one per cent. solution as cyclopegic:

O.D.V. $^{6}/_{9} + 0.25 \bigcirc + 0.25$ axis 95. $^{6}/_{6}$.

O.S.V. $^{6}/_{12} + 0.50 \bigcirc + 0.50$ axis 90. $^{6}/_{6}$.

This finding was confirmed by retinoscopy and a correction prescribed for constant wear. The day after obtaining the correction the vision in the right eye was lost also over night. O.D.V. Fingers at three feet. O.S.V. $^{6}/_{6}$. Fundus shows no change.

Examination reveals the presence of exquisitely sensitive hyperæsthesic areas over the right mammary, scapular and hypochondriac regions. She states that in walking or riding, exposed to the wind, induces frequently an attack of "hives" of the extremities—occasionally over the entire body. Globus and flatulence have been present, though not constantly, during the past three weeks.

Three years ago she suffered from "gastritis," lasting six weeks, followed by paralysis of both motion and sensation, lasting a similar length of time. One year ago suffered an attack of paralysis of motion only. The mother states that during both these attacks of paralysis the patient was unable to swallow solid food, feed herself or move in bed. Vision is said to have been lowered with each attack. A stomachic (acid hydrochloric in ess. pepsin) was given with instructions concerning diet, exercise and use of the eyes, and a positive assurance of recovery of the eyesight. Two days later the visual fields (Fig. 1) show white concentrically contracted; red, green and blue are transposed in the right, with a central scotoma for both red and green about 10° in diameter. As the red and green colors approached to within about 10 or 15 degrees of the point of their proper recognition, they were confused, calling red green and vice versa.

In the left eye the color fields are very irregularly contracted.

At this time O.D.V. $^{6}/_{7.5}$. O.S.V. $^{6}/_{5}$.

With such profound hysterical manifestations, one naturally expects relapses, but up to March 20 none had occurred, O.D.V. being $^{6}/_{6}$; O.S.V. $^{6}/_{5}$. She was fearing she would again suffer a loss of vision.

CASE II.—Amblyopia binocular; reduced by use of a mydriatic and relieved by suggestion that the correcting lens would restore normal vision.

M. G., school boy, aged 10. Is bright, well nourished, slightly undersized, but very nervous in manner and speech. States that his vision for both distant and near work is very

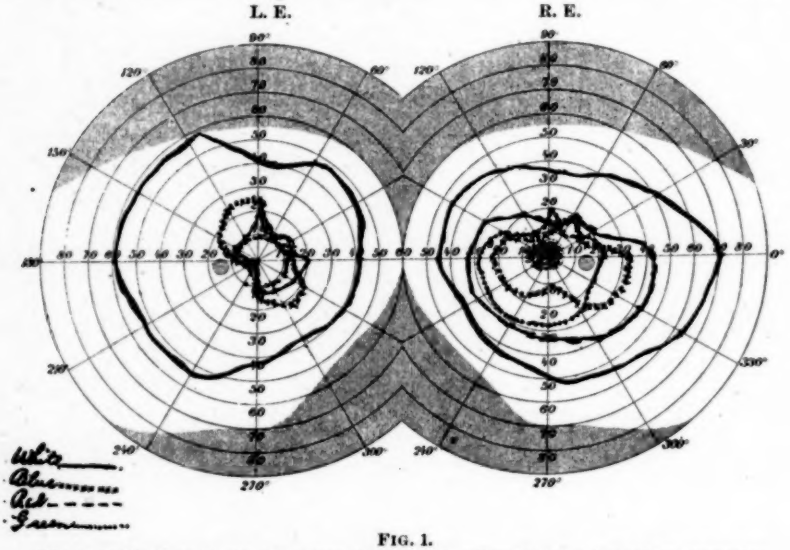

FIG. 1.
Visual fields Case I., showing concentric contraction in fields for white, irregular contraction and transposition in fields for color and central scotoma.

poor, so much so that for the past few days he has been unable to read his lessons at school.

O.D.V. $^{1}/_{45}$; O.S.V. $^{1}/_{45}$; pupillary reactions normal; fundus oculi normal. No improvement in vision could be obtained with any lens. After using a two per cent. solution of homatropin and cocain, O.D.V. $^{6}/_{45}$, + 0.50 sph. giving $^{6}/_{5}$. O.S.V. $^{6}/_{15}$, + 0.50 sph. $^{6}/_{5}$.

Atropia sulph. one per cent. solution was prescribed, and after repeated tests revealed:

O.D.V. $^{6}/_{15}$, + 1.00 sph. $^{6}/_{15}$.

O.S.V. $^{6}/_{15}$, + 1.25 sph. ⌒ + 0.25 cyl. axis 80 $^{6}/_{5}$.

A reduction in the sphere of + 0.50 D. was made for con-

stant wear, and he was positively informed his vision would be restored perfectly. Two weeks later he reported with relief of the amblyopia O.D.V. $^{6}/_{5}$; O.S.V. $^{6}/_{5}$. The visual field (Fig. 2) shows concentric contraction, with a transposition of red and green.

January 19, 1901, returned with O.D.V. $^{6}/_{5}$; O.S.V. $^{6}/_{15}$. The lowered vision in the left eye was not relieved by his cor-

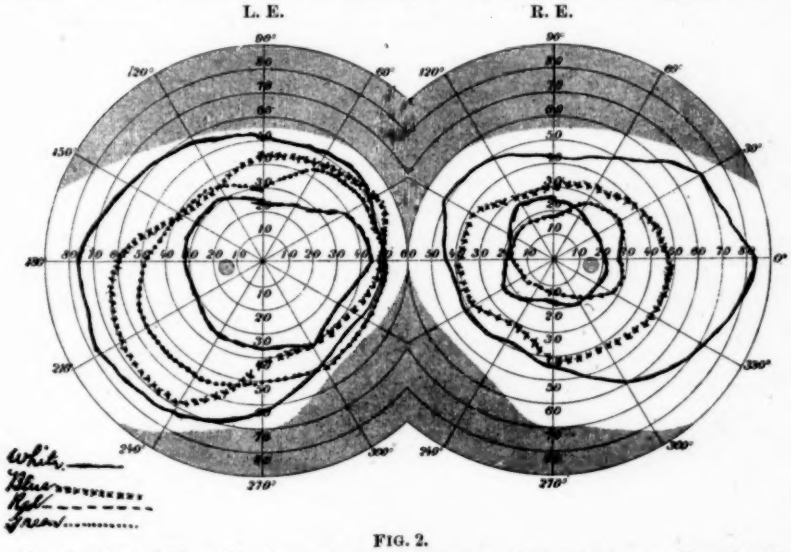

FIG. 2.
Visual fields of Case II., showing concentric contraction and transposition of red and green.

rection as worn daily, but was by the same correction in trial frame. I learned that he was reading two or three hours each evening, which I asked him to limit to one hour regularly. The visual fields were again taken and again showed contraction and transposition in the color fields. He returned in two weeks with normal vision in each eye.

CASE III.—Binocular amblyopia with monocular diplopia O.D. Visual field contracted and color fields transposed.

October 12, 1900, C. T., school boy, aged 10. Is quiet, slow of speech and very well developed. States that for past four weeks vision has been very low in right eye with slight frontal headaches. Right eye more recently affected and at the present time he cannot see to read his work, either near or distant, at school. He complains also of a diplopia, which persists on closing the left eye, but disappears on closing the right eye.

The visual fields (Fig. 3) are concentrically contracted and show a transposition of red and blue, very irregularly outlined in the left eye.

A very careful physical examination and urinalysis was made by the family physician, Dr. W. F. Stokes, who reported negative findings, aside from the eye disturbance.

Atropia one per cent. solution was prescribed as cyclopegic and repeated tests made covering a period of ten days, the final test showing:

O.D.V. $^{6}/_{60}$, + 2.00 sph. $^{6}/_{9}$.

O.S.V. $^{6}/_{60}$, + 2.00 ⌒ + 0.50 cyl. axis 75 $^{6}/_{7}$.

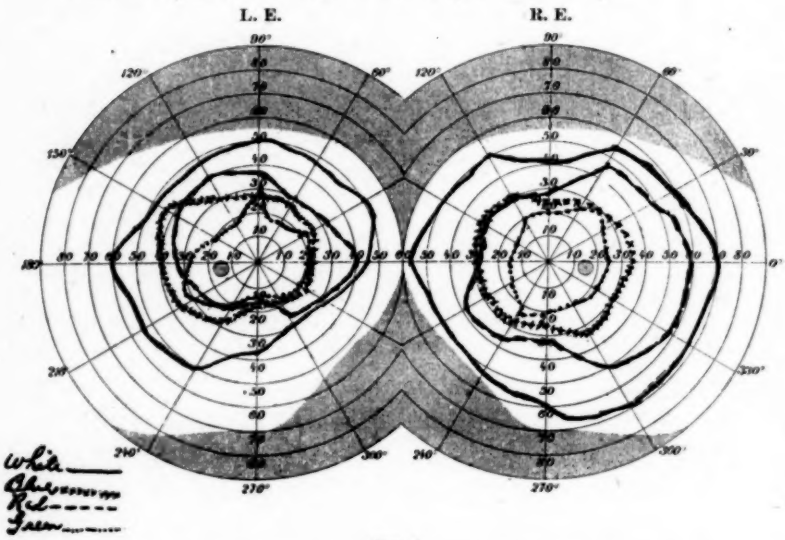

FIG. 3.
Visual fields of Case III., showing concentric contraction and transposition of red and blue.

This correction was demonstrated by the retinoscope at the first test under the cyclopegic, but the improvement in vision was gradual, each succeeding test showing improved vision. No explanation was afforded for the monocular diplopia by any finding in the refractive media or fundus.

A correction was prescribed. Four weeks later he returned with O.D.V. $^{6}/_{6}$; O.S.V. $^{6}/_{6}$. The diplopia has been relieved. He is attending school at the present time and has had no relapse of his eye trouble.

CASE IV.—Hysterical asthenopia, "ciliary pains without findings" with emotional hysterical attacks.

B. C., aged 21, a dressmaker by occupation, September 14, 1899, complains of headache, both frontal and occipital in character. Is unmarried, well nourished and extremely nervous. The headaches are radiating in character and not accompanied by any general disturbance; lids dry and burning sensation.

O.D.V. $^{6}/_{5}$ manifest + 0.50 cyl. axis 80 $^{6}/_{5}$.

O.S.V. $^{6}/_{12}$ " + 1.00 " " 90 $^{6}/_{5}$.

Under atropia O.D.V. $^{6}/_{15}$, + 0.75 sph. + 0.63 cyl. axis 80 $^{6}/_{5}$.

O.S.V. $^{6}/_{30}$, + 0.50 sph. + 1.00 cyl. axis 97. 5-$^{6}/_{5}$.

No muscular imbalance of any kind was demonstrable; with the correction given vision of $^{6}/_{5}$ was obtainable, but after a period of about six weeks the patient returned time and again complaining of the radiating pain. The refraction was again carefully reviewed and finding confirmed. A weaker cylinder and both stronger and weaker spherical corrections were tried, but all expedients were fruitless. I learned from the family physician, from whom I had the case, that he had been called to see her in repeated hysterical attacks, emotional in character, and that there were no evidences of organic disease of any kind to be found. Fourteen months after first seeing her the exaggerated headache was still present and all attempts negative in eliciting any cause therefor.

The next oculist she consulted may have made a "marvelous cure" by having gained that personal control or grasp of the patient's condition to allow of a firm suggestion being made and received; but it is my experience, where hysteria is well developed, patients are not so amenable to a suggestive measure of relief—such, for instance, as a correction for their peripheral irritation produced by the refractive error. It is true that the irritative symptoms produced by the refractive error are relieved, but so fixed have become the exaggerated symptoms that they remain after the removal of the primary cause.

Case V.—Hysterical "contracture" (paresis?) of the ciliary muscle without amblyopia, with hysterogenetic spots, painful joints and transposition in the color fields.

March 25, 1899. H. F., school girl, aged 10; well nourished and normal development. Complains of inability to see

distinctly at near point during past three weeks. Pupillary reflex normal; slight photophobia; lamp light has a branched or blurred appearance. For past three months has complained of blurring vision, for short periods only, with headaches gradually increasing in frequency.

Fundus oculi of normal appearance. No ciliary injection; no history of any sore throat or illness of any kind during past year.

O.D.V. $^{6}/_{7.5} = 0.50$ sph. $^{6}/_{6}$.

O.S.V. $^{6}/_{6}$.

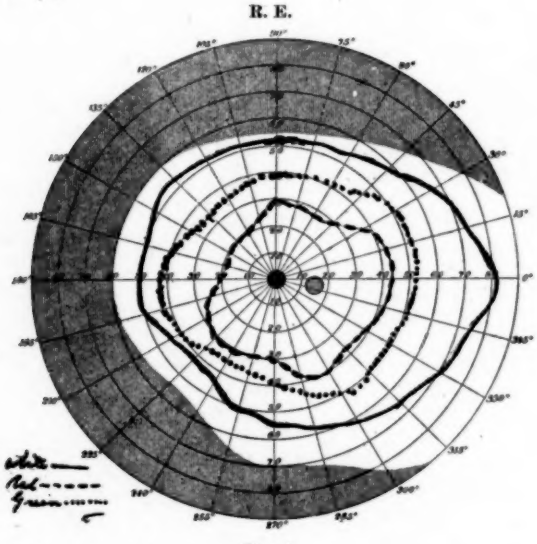

FIG. 4.
Visual fields of Case V., showing transposition of red and green in R. eye.

By placing before each eye a 2.50 D. sph. the patient is enabled to read easily small type at near point. Without them only very large type can be read.

Areas of hyperæsthesia are demonstrable on the right side, involving the mammary, scapular and hypochondriac region, also the right knee and ankle; the latter are quite as sensitive to light as firm pressure and not swollen or discolored. Temperature normal. The visual field (Fig. 4) shows concentric contraction, with complete contraction of red and green. Unfortunately the field for the left eye has been misplaced and cannot be reproduced. Hypermetropia was shown by the ophthalmoscope, and atropine was prescribed, after three days' use of which, examination shows:

O.D.V. + 1.75 sph. ⌒ + 0.25 cyl. axis 180 $^{6}/_{5}$.

O.S.V. + 2.00 sph. $^{6}/_{5}$.

The retinoscope revealed the astigmatism at 180 in right eye.

Two weeks later reported reading both near and distant type with the correction given. I am unable to learn if there has been a return of the trouble, as the family has moved and I cannot learn their present address. My record does not show the exact range of accommodation with the + 2.50 sphere before use of the atropia, and I am therefore unable to eliminate the possibility of the case having been one of

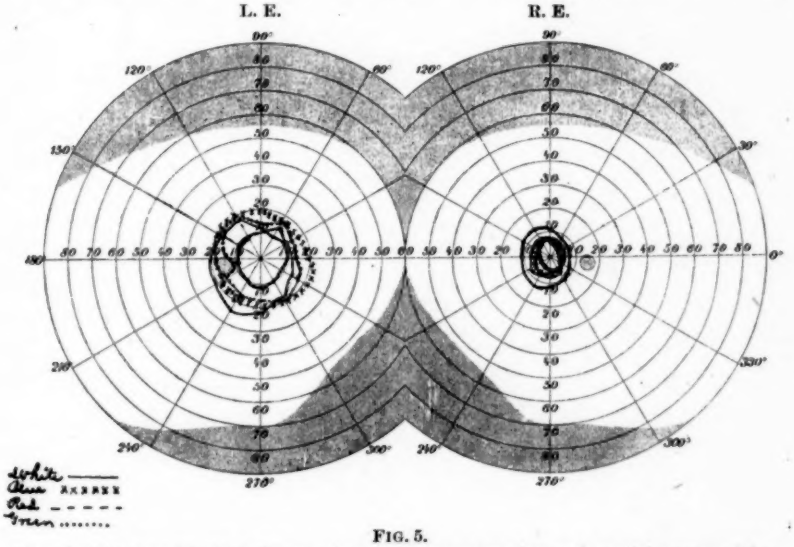

FIG. 5.
Visual fields Case VI; high degree of concentric contraction and partial transposition in color fields.

paresis of the ciliary muscle, but owing to the hypermetropia revealed by the cyclopegic, which was not discovered in the manifest reading, I am inclined to view the case as one of "contracture."

CASE VI.—Hysterical amblyopia, with recurring monocular diplopia and markedly contracted visual fields.

May 9, 1898. L. L., female, aged 14. A refractive error was corrected. O.D.V. $^{6}/_{15}$. O.S.V. $^{6}/_{12}$. Correction under atropia, giving O.D. and O.S.V. $^{6}/_{9}$. There was present a strabismus divergens, for which operative relief was refused. Six months later returned with a binocular amblyopia

not relieved by her correction. In the summer of 1899 the amblyopia was still present, with but short periods of relief. The O.D.V. was reduced to $^{1}/_{60}$; O.S.V. $^{3}/_{60}$. She complains of much asthenopia on attempts at using the eye for close work. The monocular diplopia of the right eye present lasted about six weeks. The visual fields (Fig. 5) are markedly contracted. It will be observed that the fields for color overlap in many places. After finishing the examination a second field (Fig. 6) of the left eye was taken, which shows increased restriction, indicating the retinal exhaustion so frequently present in these cases.

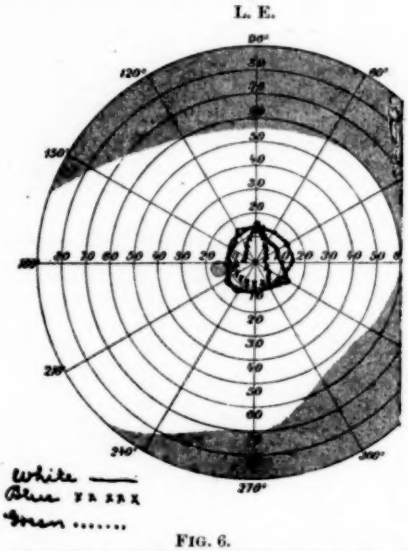

FIG. 6.
Visual fields of L. E., Case VI., shows the contraction following use of the eye, being taken ½ hour after field shown in Fig. 5.

During the summer of 1900 the patient consented to a tenotomy for the relief of the divergence. Both external recti muscles were tenotomized and parallelism obtained. Shortly after this diplopia appeared, which, on examination, was shown to be again monocular, this time involving the left eye. The false image, slightly hazy, was always symmetrically placed to the left and slightly above the true. Under a mydriatic no cause for the diplopia was discovered. During 1900 the amblyopia was accompanied by a photophobia, rendering ophthalmoscopy almost impossible at times. The fundus has shown at no time any active changes; a small

atrophic, pigmented, choroidal spot was observed in the nasal side of the right fundus, which has remained unchanged during the two and a half years she has been under observation. A variety of convulsive seizures, answering a description of hysteria, have been present for about three years; typical globus and gastric distress have frequently been present.

April 4, 1901, I last saw the patient. No photophobia was present; the eye grounds remain as at previous examination; O.D.V. and O.S.V. $^{6}/_{45}$ with the correction; by placing indifferent lenses, such as plane, 0.12 + and —, in succession before the eye, suggesting improvement with each, a vision of O.D. and O.S. $^{6}/_{9}$ was obtained. I had hoped by the suggestive influence of the operative procedure to permanently relieve the amblyopia, but the relief obtained was only temporary. The home rule of this patient is bad. She is exceedingly willful and the mother says she is unable to control her in any way. A change of home surroundings would, I think, prove beneficial.

Case VII.—Hysterical asthenopia; concentric contraction, transposition in color field and a scotoma in field for white only; partial ptosis.

H. H., 34, female, unmarried, in good general health. Complains of headache, frontal and occipital in type, aggravated by close work or reading. Has a partial ptosis, overcome at times by great effort. Occasionally complains of extreme blurring of distant vision. During the past year has lost a near relative and an unusual grief has been exhibited. Emotional hysterical attacks reported by the family physician. Pupillary reflexes are normal; slight photophobia present. Ophthalmoscope reveals normal eye grounds. O.D.V. $^{6}/_{6}$, reads very hesitatingly; after testing a few minutes, cannot read better than $^{6}/_{7.5}$. O.D.V. $^{6}/_{9}$. Similar blurring on use of the eye, vision then being $^{6}/_{12}$. No improvement with the lens. The ophthalmometer shows O.D. 1, axis 180. O.S. $^{3}/_{4}$, axis 30. Visual field taken with following results (Fig. 7): O.D field for white, slight contraction; blue, red and green contracted and transposed. O.S. contraction with scotoma for white in the temporal field outside the field for color. Color transposed and irregularly contracted. Under mydriatic (homatropin and cocain used both December 28 and 29) examination shows:

O.D.V. $^{6}/_{7.5}$, + 0.25 sph. ⌒ + 0.25 cyl. axis 10 $^{6}/_{6}$.
O.S.V. $^{6}/_{18}$, + 0.50 sph. ⌒ + 1.00 cyl. axis 165 $^{6}/_{5}$.

At the end of one week returned with much improvement. The headaches were decidedly benefitted; the visual fields were not so restricted, the scotoma had disappeared. At the present time I learn that the improvement continues. I report this case as a contrast to the continuance of the exaggeration symptoms shown in case number four. In other particulars they were very similar.

In conclusion, I wish to call attention to the following facts:

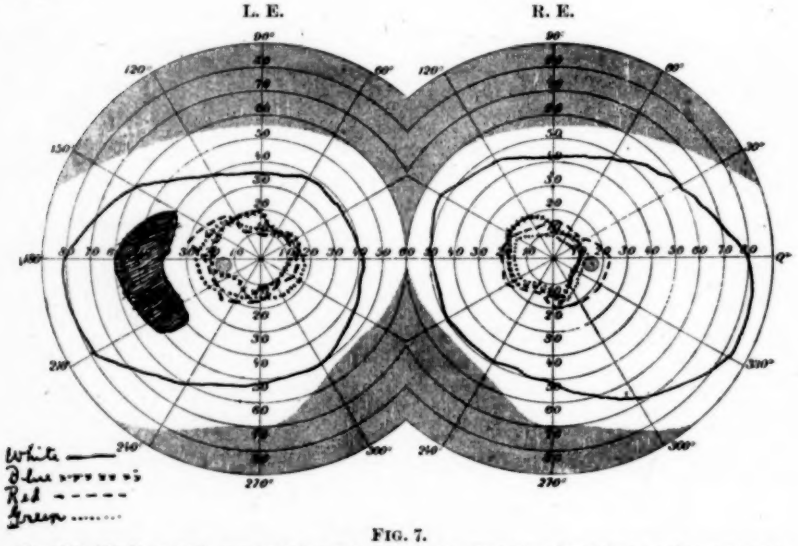

FIG. 7.
Visual fields Case VII., concentric contraction, transposition for colors and a scotoma for white in L. E. only.

In six of the cases the visual fields show contraction with transposition in the color fields. In one only is shown a central scotoma for red and green confined to but one eye. In one case a scotoma for white only.

The ages of the patients range from ten to thirty-four years; but two are males.

The cases comprise two of asthenopia, one of contracture of the ciliary muscle, and four of amblyopia; of these latter two were attended with monocular diplopia. In one only were other symptoms of hysteria absent.

In two cases improvement has been only temporary; one

final result unknown; four under observation, relieved from the active manifestations.

Errors in the refractive index were present in all the cases. That this had any determining influence in localizing the affection in the eye I am not certain, but believe such is frequently the case, the irritation incident to the eye strain being sufficient to act as the exciting cause.

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DISCUSSION.

Dr. S. C. Ayres, Cincinnati, O.—I have had quite a number of these cases. The Doctor spoke in his paper about the sudden disappearance of the amblyopia. I remember two cases of this kind occurring in two young ladies. In one of them before making the ordinary tests I found one eye very amblyopic and the other normal. I used a mydriatic and to my surprise found both eyes normal. In the other young lady there was a history of amblyopia from childhood, and to my great surprise in this case this condition disappeared under the influence of a mydriatic. I have found these disturbances occurring in young ladies with some menstrual trouble or who were under some mental excitement. I recall a lady whom I examined for some error of refraction, myopic astigmatism. In a few days after I had fitted her with glasses she told me she could not wear them at all. She came to the office and with the test glasses I found her central vision perfect, but her field of vision concentrically contracted to about 10 deg. She had some uterine trouble, was operated upon for it and the difficulty disappeared. I recall another case in a young lady whom I treated for some corneal trouble. She had keratitis and got well. It was a prolonged case, but she

went home after a while, coming back later on, stating that her trouble had returned. I examined her and there was not a sign of trouble on the cornea. Her grandfather (who was a physician) was with her, and I explained the situation to him. She had some menstrual trouble. I said to her: "You are going to get well quickly, but I shall have to hurt you a little." I picked up a strong speculum and put it into the eye and allowed it to open as widely as it would and kept it there as long as I felt like punishing her—a few minutes only. The next morning I repeated this treatment and she said she was very much better, and on the following morning she said she was perfectly well. I gave her two treatments and completely relieved her. These troubles are either hysterical due to inhibition, or some reflex cause—a question which I will not settle.

Dr. Dudley S. Reynolds, Louisville, Ky.—I have seen a number of cases of reflex disturbances in the eyes, and my experiences have been somewhat similar to those of the last speaker, but I have never tried the speculum, I think it misleading for us to conclude with the essayist that contractures of the ciliary muscle are indicated by a merely manifest, or apparent fixation of both eyes for any distance. In other words, absence of the power of accommodation, either with or without ambloypia, is not sufficient within itself to indicate disease of the ciliary muscle. I have seen a great many cases of this kind relieved promptly by general medication, especially in miasmatic conditions. I would like to suggest that the ciliary muscle is made up of two sets of fibers, and when we speak of contractures we mean a permanent condition of contraction in the muscles due to organic change of structure. This necessarily means that the nutrition of the structure is impaired, and nothing can overcome this structural change in the muscles. With the ciliary muscle in a state of permanent contraction, no test of refraction would be possible. I feel sure such conditions could not belong to the domain of hysteria, or any of those reflex neuroses found most frequently in women, and at times in men. There are, however, frequently observed conditions of spasm of accommodation, in which amblyopia seems to exist, in which a mydriatic affords relief from the pain, and discloses the error of refraction which caused it.

I had a very remarkable case of this sort of trouble in a young man, who gave up a position in the railway service because of increasing amblyopia, which disabled him from reading the coarsest type. Searching examination disclosed hyperopic astigmatism. The correction of this condition relieved him entirely.

Another instance I wish to relate is that of a young lady, aged 19 years, who had graduated from a first-class academy, and who came to see me about her eyes. She had been subjected to prolonged mental strain in her school work, after which she came home and entered society, lost a good deal of rest, and suddenly discovered she was blind. An examination showed pale, mottled, œdematous disc, with sight = $^{6}/_{60}$ Snellen. A note to the family physician brought out the fact that she was subject to chronic constipation, and had disease of the rectum, relief from which removed all the eye symptoms. She had no error of refraction. Although unable to read any print when I first saw her, her acuity of vision was perfect as soon as the intestinal trouble was removed. After this she had no use for the glasses which she had been wearing at the suggestion of a confrère.

Discussion by Dr.——(Name not known.)—These cases of course are quite commonly seen, some phases being more commonly met with than others, especially amblyopia. I had one case which was of particular interest to me because of the manner in which the extra-ocular muscles of the eye were affected. I looked up the literature pretty carefully but could find nothing reported of a similar nature to my case. I presume, however, all of these cases vary in details very much, according to the individual. The patient was a woman who was brought into my office as being perfectly blind; she said she could see nothing, could distinguish between light and dark, but when I attempted to have her count fingers, she could not count them at all. She gave a history of having had this trouble come on her suddenly four or five days before seeing me. She said she was taking a nap in the afternoon, and when she awoke she found she could not see, and this had persisted. The peculiar feature in connection with the case was the manner in which the extra-ocular muscles were affected. By the use of suggestion I could get her to look at

the letters and finally to read $^{20}/_{20}$, but I could not get her to control the movements of the eyes. In telling her to look up one eye turned up markedly and the other turned down. In telling her to look to the right one eye turned toward the right, the other remained stationary, or deviated a little to the left. By covering one eye and telling her to follow the finger with the other eye the motion was found perfect in all directions for both eyes. All through the time of her examination this particular condition persisted. She was referred to me by a physician with the idea that there was something very serious the matter. I cured her and the physician refused to report any further in the case.

Dr. W. L. Dayton, Lincoln, Neb.—I believe that the idea that the doctor has brought out in his paper of doing away with the name of hysteria in conversing with our patients or their friends, the doing away of this nomenclature, is the proper thing. I believe that we should guard against this the same as we would in telling patients that they have an incipient cataract, that they may or will become blind, for we have all had cases of incipient cataract, which we have diagnosed, and which have remained in statu quo and never advanced. Again, the laity have in their minds the fact that hysteria is nothing, and to our shame it may be said that the physician laughs at it, and says when the subject is brought up: "Oh, that is nothing." Of course it is becoming more and more the case that the better class of physicians realize the fact that hysteria is a condition due to some morbid state of the human being, and for that reason I most gladly acquiesce in the doctor's recommendation that we dispense with the name hysteria in conversing with the patient or the family.

We have all had cases such as have been brought before us to-day, and many are the ways and means which we have adopted to cure them. I have found that suggestion answers well in some cases. Hypnotism I have also tried. In some of these cases I have found that a slight error of refraction was at the bottom of the trouble. In one instance a young lady of 16 years was referred to me by the principal of one of our schools. He said she was of no account in school and could not see at all. After a most thorough examination I

found nothing wrong. While she could not see $^{22}/_{200}$ without glasses, yet she could see $^{20}/_{20}$ with plain lenses. We resorted to all manners of schemes and tests to relieve this condition, and at the same time assured her that all would be well. The girl for six or eight weeks has been wearing glasses, which are very weak; perhaps there is $^{1}/_{2}$ dioptry of astigmatism and are slightly off from the regular angle of meridian; just what I do not now remember. She has, however, been wearing the glasses and attending to her school duties ever since with no further trouble. Of course we have very many cases, from amblyopia to affections of the extrinsic muscles.

Dr. F. A. Phillips, Chicago.—In conclusion I will make a very few remarks. I tried in my essay to make clear what was meant by peripheral irritation; by this I do not mean an irritation which is confined to the eye, as it may be systemic, the influence of constipation, uterine disease, etc. All of these causes must be looked into, and many of these cases of hysteria can be relieved by attention to these irritations. I do not know what the exact cause of the change in the vision is. We cannot explain that. The speculum treatment mentioned by Dr. Ayres, to my mind, is one means of applying suggestion—a suggestive therapeutic measure. In reference to contracture of the ciliary muscle, I do not mean to imply thereby any structural change in the ciliary muscle, but a purely functional condition. Charcot has described such a condition of the ciliary muscle which he called "contracture," and it is to this that I refer. I will refer to Case V. of my series here reported as showing that no such structural changes were referred to. Regarding refractive asthenopia, we all of us in our refractive work meet with many of these cases, but we do not find such fields of vision as I have here outlined. I have taken the visual field in many of these cases as a means of proving to myself whether they were due to merely reflex cause or were hysterical in their origin; and the visual fields have invariably shown none of the concentric contraction or transposition in the color fields so characteristic of hysteria. By the term asthenopia, as used in my essay, I do not mean that variety, therefore, that is associated with refractive errors or muscle defects only, but in which characteristic hysterical symptoms are also present.

TWO NEW INSTRUMENTS.*

By SAMUEL THEOBALD, M.D.,
Clinical Professor of Ophthalmology and Otology, Johns Hopkins University.
BALTIMORE.

IN one of his papers upon operations for cataract, Dr. Knapp, if I am not mistaken, has pointed out that, in comparing the relative advantages of the simple and the combined methods of extraction, it must not be lost sight of that incarceration of the iris in the corneal wound is a complication not wholly limited to the operation without iridectomy; but that, in spite of our efforts to avoid it, it occurs occasionally in, and measurably mars the results of, combined extraction as well.

If the outcome of an iridectomy done under such circumstances is not invariably all that could be desired, it goes without saying that when it is performed upon an inflamed or degenerated iris—for the control, perhaps, of glaucoma or irido-cyclitis—we are still less sure of securing the classical result which we find pictured in the books. In a word, I think it will be admitted that our iridectomies are not always just what we might wish them to be. They are seldom the key-hole affairs which the illustrators have made us familiar with; and, though extensive incarceration may not be of frequent occurrence, it is not uncommon to find one margin of the coloboma different in shape from the other, or lying in a different plane, indicating, at least, a slight adhesion between the iris and the inner lip of the corneal section.

Some months since the idea suggested itself to me that by reversing the usual curve of the iridectomy scissors, so that, instead of the convex surface, the concavity of the blades should be applied to the convexity of the corneal border, a better mechanical effect might be obtained, and a cleaner, more perfect coloboma be secured.

I intrusted the carrying out of this idea to Mr. Neuhaus, one of our Baltimore instrument makers,† and the scissors shown you, made after a model which I furnished him, are the result of his handicraft (Fig. 1.) He has also made me a pair with the ordinary scissor handles, and doubtless they

*A paper read before the American Ophthalmological Society, July, 1891.

†Chas. Neuhaus & Co., 510 N. Eutaw St., Baltimore.

could be made in the fashion of De Wecker's scissors, if desired.

They are not well adapted to the making of an iridectomy by several successive cuts; but for the purpose for which they were intended—the removal of a piece of iris by a single cut—I have found them to be all that I anticipated. I have used them in cataract extractions and in iridectomies for glaucoma and for various other purposes, and have been convinced that a more perfect coloboma was obtained; that the iris was more cleanly removed up to its ciliary attachment, and that adhesions between the iris and the corneal wound were to a great extent obviated.

The other instrument which I wish to bring to your notice

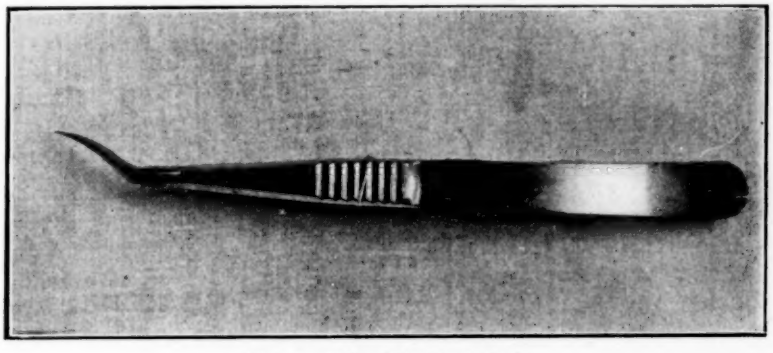

FIG. 1. (About ¾ actual size.)

is a lacrymal probe, contrived for a special purpose, and intended to supplement the large probes which I have employed for many years.

As I have had occasion to point out heretofore, in the later stages of the radical treatment of strictures of the lacrymal duct, when the interval between the probings has been increased to several weeks, it occasionally happens that a contraction occurring at the juncture of the canaliculus and the lacrymal sac makes it difficult to insinuate into the sac the large probe which had been passed previously without difficulty.* I have also dwelt upon another class of cases, in which the existence of a firm constriction at this same point complicates and retards the early stages of the probing treatment, making it difficult or impracticable to introduce other

*Diseases of the Lacrymal Apparatus. Norris and Oliver's System of Diseases of the Eye, Vol. III.

than a quite small probe into the *sac*, though a considerably larger one, could it be gotten through this constriction, might be passed easily through the strictures in the duct itself.

The probe (Fig. 2) which I show you was devised solely to meet the conditions existing in these two classes of cases—to accomplish the rapid and effectual dilation of strictures or contractions at the juncture of the canaliculus and the sac, and thus permit the passage of the ordinary probes. For probing the duct, itself, it is manifestly unsuited. For several mm. from the tip, as you will see, it is quite slender, and then dilates rapidly to a much larger size. The exact size is not a matter of much moment; but I have fixed upon No. 12

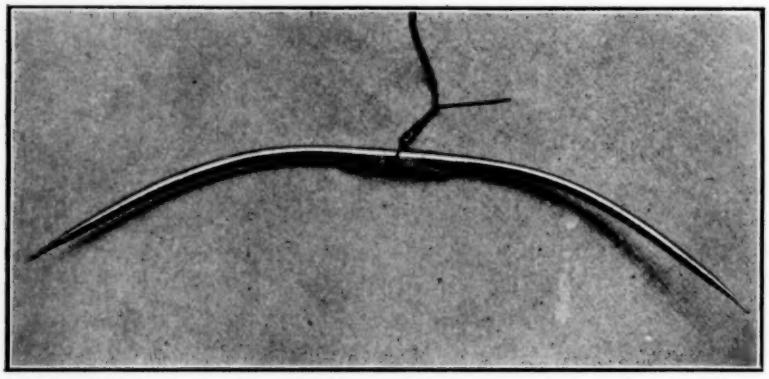

FIG. 2. (About ⅔ actual size.)

and No. 14 for the larger portions and No. 3 for the slender part near the ends. It bears some resemblance to the well-known conical probe of Weber; but a comparison of the two will show that they differ materially. Weber's probe increases in size so gradually that its whole length must needs be passed into the duct to accomplish what this one will effect when introduced but a third as far.

It remains but to add that an experience extending over some months has convinced me that it meets the conditions for which it was contrived, and that it has proved distinctly helpful.*

*The Chas. Willms Surg. Instrument Mf'g Co., Howard and Saratoga Sts., Baltimore, have made this probe for me in a very satisfactory manner. Mr. E. B. Meyrowitz, 104 East Twenty-third Street, New York, also has undertaken to make both the iris scissors and the probe.

ANOTHER WORD OF DISCUSSION ON DR. ALT'S PAPER ON OPHTHALMIA NEONATORUM.*

By DR. LUCIEN HOWE,
BUFFALO.

IN the last number of the JOURNAL OF OPHTHALMOLOGY an extended account is given of the discussion of Dr. Adolf Alt's paper on Blennorrhœa Neonatorum. The one who opens that discussion begins by saying, if he is rightly quoted, that he wishes "to protest earnestly against the prevalence of meddlesome interference with the eyes of the new born," and also that "there is no sense in medicating the sound uninfected eyes of the new born."

The next is quoted as saying "that he never allows the Credé method to be used without his consent," although it is evident from the context that he is in some doubt as to just what the Credé method is.

In general, the tenor of the discussion is by no means to accord with opinions which some other practitioners, at least, have long considered to be based on well-established fact.

In view of this a further word or two may be permissable.

The first observation which I venture to make is that the prevention of ophthalmia neonatorum in itself is a subject in regard to which the opthalmologist is not qualified to speak at all. That is a question for the obstetrician, and he alone is competent to judge concerning it. Any conclusion arrived at concerning the value of Credé's method, or any other method, must be based on the combined experience of obstetricians.

Second. We now have the results of this combined experience, accurately recorded by different observers in different parts of the world. It has been published at different times, as various additions have been made to it, either in the number of children who developed ophthalmia without any treatment whatever, or after Credé's method or after other methods. One of the best papers on this subject is by Kostling of Halle, in the *Archiv für Gynækologie* for 1896. These figures and others are too well known to require repetition, though it may be worth while to mention that even at that time the obstetricians, summing up their experience,

*AM. JOUR. OF OPHTH., June, 1901.

found that out of 17,767 children who received no prophylactic treatment, ophthalmia developed in nine and two-tenths per cent. (9.2), whereas among 24,724 children who were treated by the Credé method only sixty-five hundredths per cent., or a little over one-half of one per cent. developed the disease. Such facts require no comment.

Third. It is true that when any such treatment produces an inflammation of the eyes, even a slight conjunctivitis, it then becomes a subject about which the ophthalmologist may have some opinion. But in forming such an opinion the number of eyes which would have been destroyed or injured by ophthalmia neonatorum, but which are saved from the disease, should be compared with those which are known to have been destroyed or injured by the prophylactic treatment, and the verdict must be given in favor of that form of treatment which saves the greater number of eyes.

While it must be admitted that one drop of a two per cent. solution of silver nitrate will often produce an annoying conjunctivitis, it is also true that there are now in the literature only four, or at most five, cases in which real harm can be distinctly and unquestionably traced to that cause. Two of these were found by Cohn in response to a circular letter of inquiry, very widely distributed; there is one by de Schweinitz of bleeding, another by Pomeroy and another doubtful. It must be remembered also that in one case reported by Hofmeier ulceration has followed the use of sterilized water. Perhaps some of those who joined in the discussion mentioned can enrich the literature by adding other cases in which real harm actually did result from the use of silver nitrate. If so we would all be much interested to know the exact facts with the details.

Fourth. No one would contend that the so-called Credé method is the best prophylactic which ever will be available. The obstetricians are still at work at this phase of the question. We all hope that from weaker solutions of silver, or from protargol or from other agents, they can yet report to us equally good results in a large number of cases. Until they can do that, however, we must accept the statement that a single instillation of a two per cent. solution of silver nitrate, in all cases, is the most effective method of preventing ophthalmia neonatorum.

Fifth. Until ophthalmologists can show that the harm done by this method is greater than the certain good which it accomplishes, or until other data are obtained which alter the present status of this question, it is the duty of us all to popularize among the profession and the laity the facts which are now at our command. These facts have been summarized by Prof. Dimmer as his last word on the subject, so well quoted by Cohn, namely: Purulent ophthalmia of infancy can and must be wiped out of every civilized country.

A FEW WORDS IN ADDITION TO DR. HOWE'S PAPER.

By ADOLF ALT, M.D.

IF I am not mistaken, the standpoint concerning the Credé method taken by Dr. Howe is in so far correct, as in lying-in hospitals, where all sorts and conditions of women bring their offspring into the world, a most rigid prophylaxis is not only the correct thing but even demanded. Whether a two per cent. silver nitrate *only* will do the work, or not, has to be shown by future experience.

It is different, however, in private practice. Here the obstetrician has usually a good knowledge of the conditions of the passage through which the baby has to come. *He*, then, it seems to me, is the man to say in this case a prophylactic instillation into the eyes of the newly-born is necessary; and in that case there is no need of such measures.

The oculist, in most cases, can but help to make all those who are connected with the confining of the women aware of the good of prophylaxis where it is necessary. In by far the largest number of cases, if not in all, he sees the blennorrhœa neonatorum as a fully developed disease, and then is called upon to treat it. This is a totally different duty from that of the obstetrician and his assistants.

In this particular I agree fully with Dr. Howe's remarks. As to the necessity of a two per cent. nitrate of silver solution for prophylaxis or treatment, I have given my opinion in the paper which elicited this discussion. I have, since reading this paper, treated several cases of blennorrhœa, and among others an extremely severe one with ulceration of both corneæ, in which the instillation of a two per cent. solution of protargol, instilled by a physician three times a day, cured the affection in twelve days and the ulcers were healed.

I certainly believe in appropriate prophylaxis; with regard to the treatment I have nothing to add to what I have said.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.

ST. LOUIS, MO.

ALBUMINURIC RETINITIS AND URÆMIC AMAUROSIS, WITH ESPECIAL REFERÈNCE TO THEIR OCCURRENCE IN PREGNANCY.

Edmund W. Clap (*Boston Medical and Surgical Journal*, July 11, 1901) says that albuminuric retinitis and uræmic amaurosis are rare conditions in pregnancy, but very important when they do occur.

"Albuminuric retinitis is a disease accompanied by immediate visible changes in the eyes. Albumin is always present in the urine. It may occur at any time during pregnancy, especially beginning during the first two months or after the sixth month. Its prominent symptom is gradual failure of vision. It is very apt to recur in successive pregnancies, though not necessarily. Blindness is almost never caused by the first attack, but more and more damage is done by each recurrence. Uræmic amaurosis is a disorder of the visual apparatus not accompanied by immediate visible signs in the retina, although it may finally lead to atrophy. It occurs late in pregnancy, usually with other signs and symptoms of eclampsia, so that it seldom has to be considered alone. It apparently never destroys vision by the first attack. Like albuminuric retinitis, it is very apt to recur in subsequent pregnancies. The treatment of both conditions is the treatment of the albuminuria and non-use of the eyes, enforced by atropine and dark glasses if necessary. The prognosis of uræmic amaurosis as to sight is favorable for the first attack, and less and less so for each succeeding attack; but the importance of this is usually overshadowed by the uræmic condition present. The prognosis of albuminuric retinitis as to sight is favorable for the first attack, if occurring after the sixth month, but grows worse if it occurs in succeeding pregnancies. Prognosis for sight is bad if it comes on earlier than the sixth month, especially if it begins during the first two months; and in these cases great danger to both child and mother may be expected from eclampsia. As to abortion or premature labor, we are seldom called on to consider it for the

preservation of sight alone, since so many and such grave dangers are present to both mother and child from uræmia. If we consider the preservation of sight a cause for premature labor, then it may have to be done in uræmic amaurosis recurring in successive pregnancies, with progressive loss of sight, the degree of impairment of sight and the amount of damage done to the optic nerve deciding the question. In retinitis albuminurica occurring early, abortion should be considered if the retinitis is of a severe type, especially if hæmorrhagic, or if a slight retinitis progresses under treatment, remembering that in these cases the life of the child is uncertain any way, and the mother runs grave risk of eclampsia if the pregnancy goes on to term. In retinitis coming on after the sixth month it is best to wait and watch carefully, especially in a first attack, and not to induce labor unless some other albuminuric symptom demands it. In the subsequent attacks the damage to vision and the severity of the retinitis may turn the scale in favor of premature delivery, even when slight eclamptic symptoms are present."

NOTES ON THE BACTERIOLOGY OF THE CONJUNCTIVAL SAC AND ITS BEARING UPON SURGICAL PROCEDURE.

P. Chalmers Jamison, after a thorough study of the subject, draws the following conclusions:

I. That the pyogenic or pus producing organisms are found in the normal conjunctival secretion, although probably in attenuated form.

II. That under normal conditions they do not propagate.

III. That the eye under normal conditions is bountifully supplied with means of antagonizing bacterial growth.

IV. That diminished resistance such as occur in inflammations of the membrane in operative interference, alter the nutritive nature of the secretion and probably convert it into a more suitable medium for germ life.

V. That the secretion of the eye is not an antiseptic in itself.

VI. That strong antiseptics in the conjunctival sac diminish the resistance and place the eye on a lower plane to resist germ invasion.

VII. That much attention should be given to washing out the residual bacteria prior to operation.

VIII. That as much care should be taken in regard to an-

tiseptics and cleanliness in the external preparation of both patient and operator, as is adopted by the general surgeon of modern times, as, while the danger of suppuration is more remote, the result if it occurs is more disastrous.

REMARKS ON THE TREATMENT OF THE TEAR DUCT.

Albrand (*Deutsche Medicinische Wochenschrift*, April 4, 1901) recommends that the patients be taught to use the sound themselves after operations upon the tear duct. The difficulty is, however, that they are likely to grow tired of this and give it up, and so require renewed dilatation. Valpinus' permanent sound is oftentimes used with much satisfaction, but many patients cannot bear it. It not infrequently causes marked pain in the nose. He considers extirpation of the sac most satisfactory in cases of long duration with more or less profuse muco-purulent secretion, in all cases with fistula, in those with changes in the periosteum and with caries of the bone, in those resulting from the action of caustics or from trauma, in cases with prolonged conjunctivitis, ulcerations of the lids, and in trachoma. It should also be undertaken in less severe cases in which social reasons indicate its use, *i. e.*, in patients who must work constantly for a livelihood. In such cases it saves the patients much valuable time. He has attempted for prophylactic reasons, as, for instance, preceding cataract operations, to close the tear duct by touching the openings with a glowing needle. He never succeeded in this, however. He insists that the nose must always be carefully examined in cases of disease of the tear duct, as not infrequently some nasal condition is the cause of the continuous trouble with the tear duct.

THE ECONOMIC VALUATION OF VISION.

H. V. Würdemann and H. Magnus (*Annals of Ophthalmology*, April) show that a correct estimation of the effect of injuries to the visual apparatus upon the earning powers may be obtained by a simple mathematical calculation. The complete earning ability depends upon three factors: "1. The unimpaired functional power of the bodily organs. 2. The technical knowledge necessary for the carrying on of the vocation. 3. The ability to compete in the labor market. Normal physiologic vision consists of a series of different factors, *i. e.*, the central acuity, visual field, light and color sense, adaptive faculty, muscular movements and cerebral processes

all acting together to produce sight. Each of these numerals is given its specific and relative value in the equation, the whole sum equaling normal physiologic vision. Although the formula given is a rather heavy mathematical one, its handling is extremely easy, for we simply replace its several factors by the value of the function. Thus, if all be uninjured, the earning ability = 1, the valuations are very easily determined by looking at the tables which have been compiled by Würdemann and Magnus, or by estimation by a diagram; thus the calculation involves but a simple example in multiplication and takes but a few minutes' time. There is a considerable difference between the scientific definition of blindness and that of economic blindness. The highest and lowest points of scientific visual acuity do not correspond to those used in business; *i. e.*, a day laborer may have his visual acuity reduced to as low as 50 per cent. of normal, yet be able to continue his work just as well as before, but if it were reduced below 5 per cent. of normal he would be unable to do any of his work; in the case of a skilled workman, the reduction to any marked extent would greatly interfere with the work, and thus a skilled mechanic could not lose more than 25 per cent. of his visual acuity without economic damage, and if he should be reduced to 15 per cent. he could not do any of his work. From the results of experience and of mathematical calculation by means of this formula, it is clearly shown that in trades demanding high vision a one-eyed person loses 30 per cent. of his earning ability for the first year after the accident and 20 per cent. thereafter; for the lower grades it is 27 per cent. for the first year and 18 per cent. thereafter. Where there is a gradual loss of sight in one eye following an accident, in trades requiring higher visual demands, the proportion is 21 per cent., and in professions with lower visual demands 18 per cent. The question of claim for damages by reason of the loss of one eye through accident is exhaustively discussed, as well as specific injuries affecting the visual field, color sense, or causing weak vision in any way. Consideration is likewise given to weak vision existing before the accident. The economic damage to the individual from loss of vision through accidents depends on the percentage of the loss of earning ability, on the wages that the plaintiff has been earning and on the character of his work and his age. Tak-

ing these facts into consideration, and accepting certain wage standards and probable duration of working life and the percentage of economic damage as factors, the damage to the individual can be exactly shown in dollars and cents. The settlement of claims for damages should take this economic damage into consideration as the principal element for settlement. This, however, is only one of the legal factors involved. It should be modified according to American law by reduction being made in favor of the defendant in case of extenuating circumstances or contributory negligence, and addition made thereto of actual expense incurred by the plaintiff during his illness and damages for pain and anguish suffered by reason thereof; the amount thereof must always be empirically estimated by the courts.—*Jour. A. M. A.*

TUBERCULOSIS OF THE IRIS.

William F. Mittendorf (*Medical News*, May 25) describes the different forms, which are sometimes primary and sometimes secondary. They may be divided into the solitary and multiple forms, and the latter again into the acute and chronic. As a rule it is a disease of youth or middle life, and one eye only is usually affected. In the first class there is usually tuberculosis in the general system; however, not necessarily of the lungs; it is characterized by the development of one or more grayish nodules in the iris, early appearance of ciliary injection, and intense pain in the eye and forehead. The disease rapidly advances, impairing the vision, and the eyeball may become filled with tubercular matter, which frequently necessitates enucleation.

Another form occurs in the early stages of pulmonary tuberculosis, and runs a slow course. It may last several months and be entirely relieved with the general improvement of the patient.

The third form is very serious and usually leads to the loss of the eye. There is a single tubercular deposit at the bottom of the anterior chamber, involving the ciliary body, which is very painful, and as the tumor develops presses on the cornea, which soon breaks down. Even this type may yield to treatment and some sight be preserved.

As to treatment, the author does not believe in iridectomy, and if the disease resists the usual local and internal treatment an enucleation is frequently advised, to relieve the pain and, if possible, prevent the infection of other tissues.